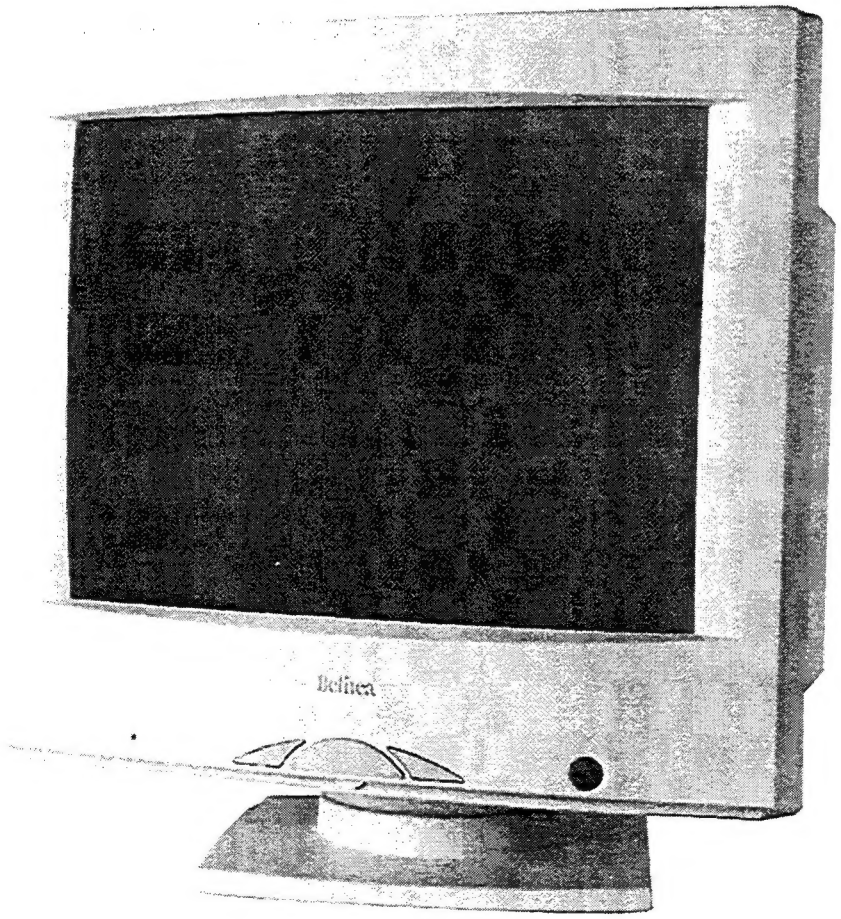
Belinea 10 60 20

Color Monitor
Service Manual



CAUTION:

Before servicing this chassis, read the

"IMPORTANT SERVICE SAFETY INFORMATION"

on next page of this manual.

SPECIFICATIONS

• Picture Tube:	CRT Size	: 48cm (19") diagonal
	Viewable Size	: 45cm (17.7") max. Screen diagonal
	Deflection	: 90 degree deflection
	Dot Pitch	: 0.26mm
	Phosphor	: P22
• Input Signal:	Video	: Analog
	Sync	: Separate TTL level
• Scanning Frequency:	Horizontal	: 30 - 95 KHz
	Vertical	: 47 - 150 Hz
• Display Area:	Horizontal	: 346 ± 5 mm (STANDARD MODE)
	Vertical	: 260 ± 5 mm
• Bandwidth:	150 MHz (nominal)	
• Resolution:	1600 x 1280/75 Hz(NI)	
• Power Source:	100 to 240 Vac 60/50 Hz (full range)	
• Power Consumption:	150 W (MAX)	
• Input Connector:	D-15 PIN mini D-SUB	
• Display Color:	Limited only by the VGA Card	
• Front Control:	Encorder with Push-on Switch, Power SW	
• Environment:	Operating Temperature	: 0°C to 40°C
	Operating Humidity	: 20% to 80%
	Nonoperating Temperature	: -20°C to 65°C
	Nonoperating Humidity	: 10% to 85%
• Dimensions:	500mm(W)x487mm(H)x480mm(D)(With Base)	
• Weight:	Approx. 20.5 Kgs(NET)	

DISASSEMBLY INSTRUCTIONS

CABINET BACK REMOVE (Figure 3)

1. Remove the screws located on the back cover of the monitor bottom.
2. Gently slide the rear cover backwards until free of the monitor chassis.

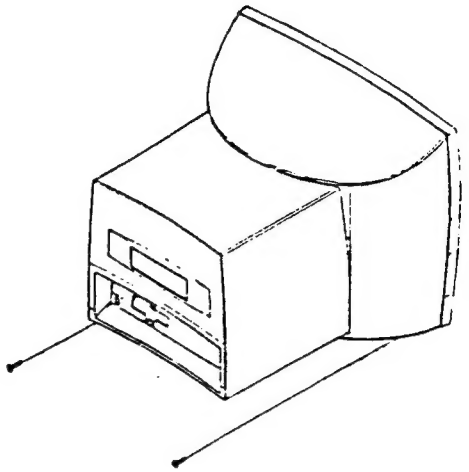


Figure 3

MAIN PCB REMOVAL (Figure 4)

1. Discharge the residual high voltage from the CRT Anode through a 100KΩ resister to the flyback Transformer mounting bracket.
2. Remove the Anode Cap from the CRT.
3. Remove all connectors and jacks from the Main PCB.
4. Gently slide the Main PCB backwards until free of the mounting brackets. Be careful not to damage the switches and control shafts.

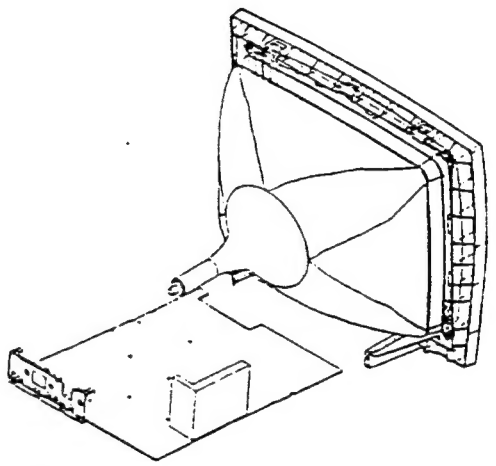


Figure 4

CRT REMOVAL (Figure 5)

1. Place the monitor face down on a soft surface.
2. Remove the CRT and place it on a soft surface.

NOTE: Do not move the deflection yoke and magnet assembly attached to the CRT neck. Handle these assembly carefully to avoid damaging them.

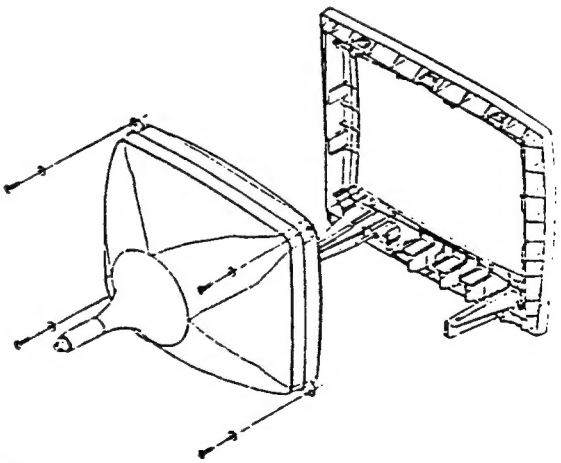


Figure 5

THEORY OF OPERATION

1. VIDEO AND OSD(On Screen Display) AMPLIFIER
   U801 (MC13282) is a full feature video pre-amplifier with OSD input.
   # Pin 8, 10, 12 is R, G, B OSD input.
   # Pin 2, 4, 6 is R, G, B video input.
   # Pin 22, 19, 15 is R, G, B video output.
   # The video signal from IC output is fed into the cascode-type video power amplifier.

2. VIDEO POWER AMPLIFIER
   U803 (CVA2412AX) is designed to drive a CRT. The device is used with pre-amplifier (U801), where the common emitter transistor is already a part of the pre-amplifier.
   # Pin 7, 8, 4 is cascode buffer Emitter and be connected to Q810, Q811, Q812.
   # Pin 5, 10, 2 is R, G, B power output.

3. DEFLECTION PROCESS AND HIGH-VOLTAGE GENERATION CIRCUIT
   U401 (TDA9105) is to control all the functions related to the horizontal and vertical deflection in a multimodes monitor. It's main functions are:
   # Positive or Negative sync polarities.
   # Auto-sync horizontal processing.
   # Auto-sync vertical processing.
   # East/West signal processing block.
   # H-PLL lock/unlock identification.
   # Safety blanking output.
   # U405, U406, U407, Q437, Q438, T407, Q431, L403, Q425 are used for high-voltage generation output.
   # U403, U404, Q439, Q440, Q418, T406, Q401, Q402, T403, Q404, T401, Q403 are used for deflection generation output.
   # U402, Q419, Q420, Q421, Q422, T405 are used for dynamic focus controller.

4. VERTICAL DEFLECTION OUTPUT CIRCUIT
   U301 (TDA8172) is a TV vertical deflection output circuit. It's main function are:
   # Power amplifier.
   # Flyback generator.
   # Thermal protection.

5. MONITOR ON SCREEN DISPLAY
   U802 (LXC4371PL) is a micro controller unit to allow colored symbols or characters to be displayed onto color monitor. There are 8 channels for external digital to analog control.

6. MICRO-CONTROLLER
   U201 (UM68P61) is an HCMOS micro-controller unit with dedicated peripherals for TV and Monitor applications. It's main function are:
   # Include Run, Wait, and Stop Modes.
   # 8Kx8 ROM, 256x8 RAM
   # Sync Processor for video timing analysis
   # Watchdog for system reliability and integrity.

12 8-bit PWM/BRM Digital to Analog outputs.

7. SWITCHING POWER SUPPLY

AC power is rectified by D102, then filtered by C107.
Power is transferred by T102 to the secondary circuit.
U102, U103 and U107 control and stabilize the output voltage.
VR101 adjusts the output voltage.
Q107 is the over voltage protector.

8. POWER FACTOR CORRECTION

U101 is a controller and driver of Q101 (MOSFET) for the implementation of active power factor correction, for sinusoidal line current consumption. It's main function are:

Undervoltage lock out.
Overvoltage protection
Quadrant multiplier.

LOCATION OF CONTROLS

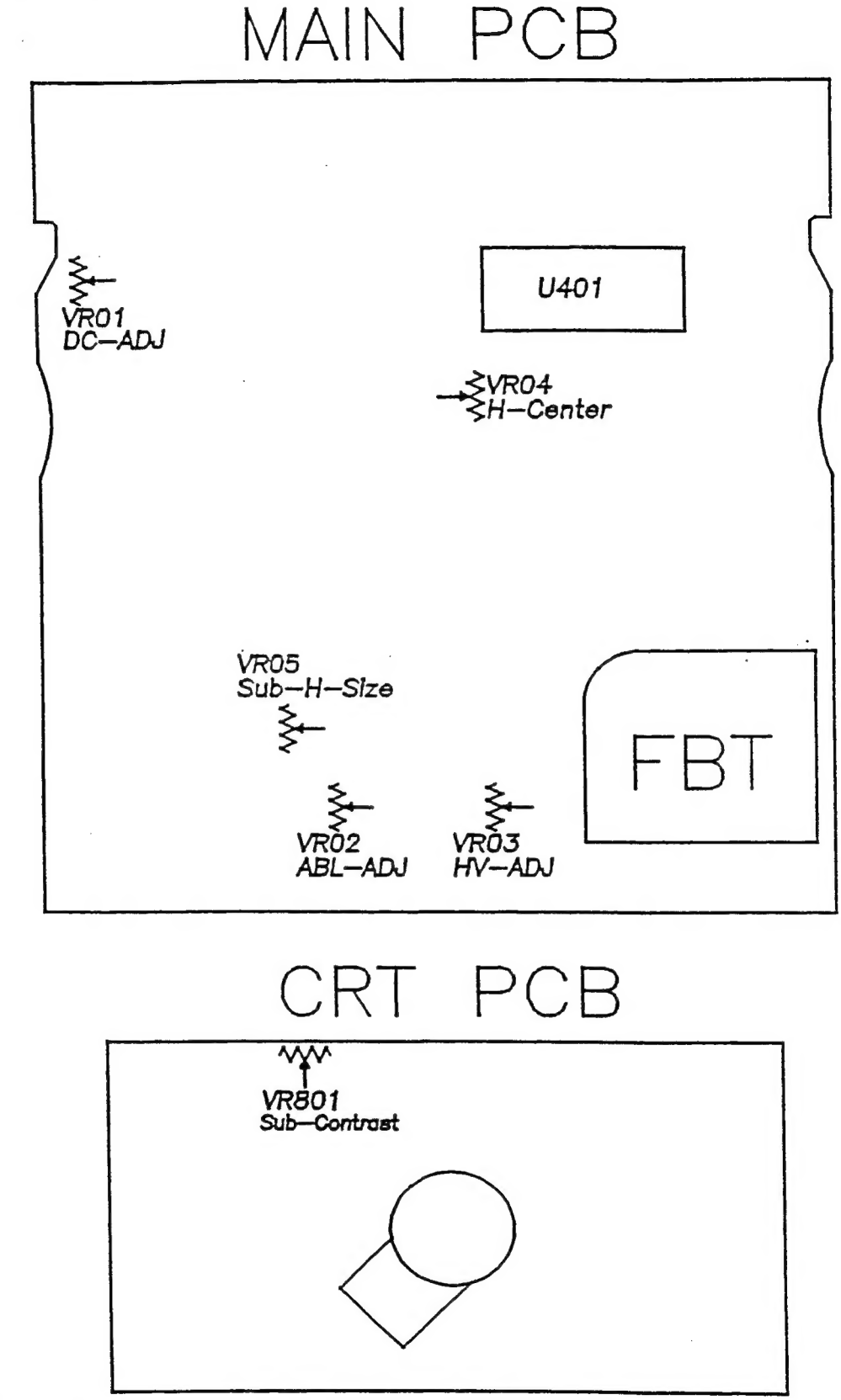


Figure 6

ELECTRICAL ADJUSTMENT

(1) BEFORE ADJUSTMENT

1. Equipment:
   Video Signal Generator (Quantum Data Model 903/Chroma Model 2135)
   Personal Computer or VGA card
   Color Analyzer (MINOLTA CA-100)
2. Set all SVR to half (The SVR SET on central point).
3. AC power input: 100 to 240 Vac 60/50 Hz.
4. Check item: MODE 1 to MODE 10 (refer the Chapter of Display Mode and Timing chart).
5. Before starting adjust each item makeing sure the MODE and Timing is matched with each adjustment item.

(2) B+(205V) ADJUSTMENT (VR01)

1. Input voltage 110Vac to monitor.
2. Set Video Signal Generator to MODE 2 (31 KHz) and input to monitor.
3. Press and rotate the Encoder to set Contrast ◑ and Brightness ☼ to MIN.
4. Press and rotate the Encoder to select Horizontal width ⊟.
5. Press and rotate the Encoder to adjust Horizontal width = 346 ± 5 mm.
6. Turn FBT screen VR to make raster = 0 FL.
7. Connect Digital Voltmeter between C127 negative and GND.
8. Adjust B+ to 205V(± 1V) by turning VR101.
9. Check $V_{D115(N)}$ = 7.2 ± 0.3 V_{DC}, $V_{D113(N)}$ = 14.7 ± 0.5 V_{DC}, $V_{D112(N)}$ = 80 ± 1.5 V_{DC}, $V_{D114(P)}$ = -12 ± 0.3 V_{DC}.

(3) HIGH VOLTAGE ADJUSTMENT (VR03)

1. Set Video Signal Generator to MODE 2 (31 KHz) and input to monitor.
2. Connect High Voltage Meter between Anode Cap and GND.
3. Press and rotate the Encoder to select Horizontal width ⊟.
4. Press and rotate the Encoder to adjust Horizontal width = 300 ± 5 mm.
5. Set Brightness to make raster = 0 FL.
6. Set Contrast to MIN.
7. Adjust VR03 to let High voltage = 25.9 ± 0.1KV.
8. Set Video Signal Generator to MODE 10 (93 KHz) and input to monitor.
9. Check High voltage value in -0.3KV ~ -0.5KV.

(4) MODE 10 (93 KHz) CHECK

1. X-RAY test: short D435 to check X-RAY circuit (screen shut down).
2. Adjust VR04 let A-B= 0 ± 1 mm (See Fig 7) for rater center.

(5) DYNAMIC FOCUS CHECK

1. Connect Scope between FBT PIN 12 and GND.
2. Check Vertical Frequency Pallabola wave = 165 Vpp ± 15 Vpp.
3. Check Horizontal Frequency Pallabola wave = 320 Vpp ± 30 Vpp.

(6) VERTICAL SIZE ADJUSTMENT

1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor.

2. Press and rotate the Encoder to select Vertical size.
3. Press and rotate the Encoder to adjust Vertical size = 260 ± 2 mm.

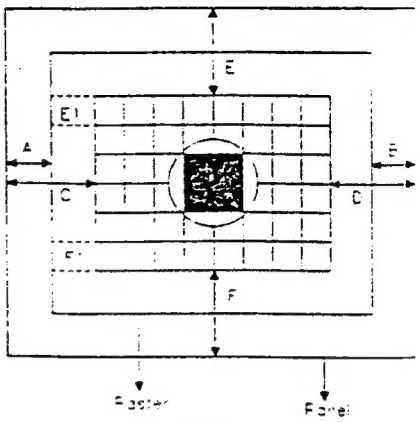


Figure 7

(7) VERTICAL CENTER ADJUSTMENT
1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor.
2. Press and rotate the Encoder to select Vertical center.
3. Press and rotate the Encoder to adjust Vertical center ≤ 2 mm. (See Fig 7, | E-F | ≤ 2 mm)

(8) HORIZONTAL SIZE ADJUSTMENT
1. Set Video Signal Generator to MODE 1 and input to monitor.
2. Press and rotate the Encoder to select Horizontal size.
3. Press and rotate the Encoder to adjust Horizontal size = 346 ± 3 mm.

(9) HORIZONTAL CENTER ADJUSTMENT
1. Set Video Signal Generator to MODE 1 and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select Horizontal center.
3. Press and rotate the Encoder to adjust Horizontal center ≤ 2 mm. (See Fig 7, | C-D | ≤ 2 mm)

(10) PINCUSHION ADJUSTMENT
1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select Pincushion.
3. Press and rotate the Encoder to let X ≤ 2.0 mm (See Fig 8).

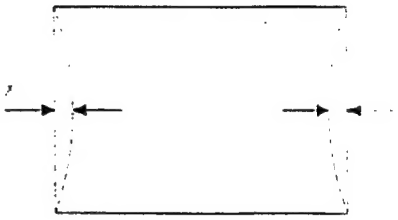


Figure 8

(11) TRAPEZOID ADJUSTMENT
1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select Trapezoid.
3. Press and rotate the Encoder to let Y ≤ 2.0 mm (See Fig 9).

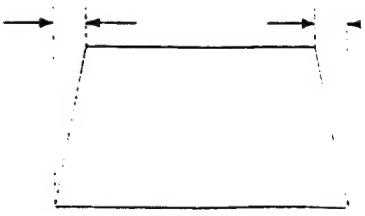


Figure 9

(12) BALANCE ADJUSTMENT
1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select Balance.
3. Press and rotate the Encoder to let P-B ≤ 1.5 mm. (See Fig 10).

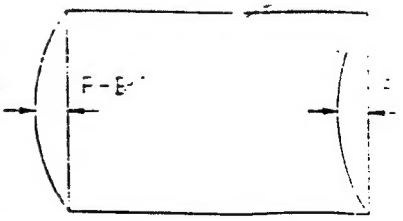


Figure 10

(13) PARALLEL ADJUSTMENT

1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select Parallel ▱.
3. Press and rotate the Encoder to let P-R ≤ 1.5 mm. (See Fig 11).

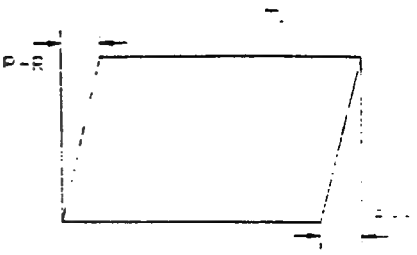


Figure 11

(14) ROTATION(TILT) ADJUSTMENT

1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select Rotation.
3. Press and rotate the Encoder to let Rotation ≤ 1.5 mm.

(15) MOIRE ADJUSTMENT

1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select Moire.
3. Press and rotate the Encoder to let video Moire is best.

(16) OSD ADJUSTMENT

1. Press and rotate the Encoder to select OSD position.
2. Press and rotate the Encoder to let OSD position in the picture center.

(17) SAVE FUNCTION

1. The monitor provides auto save function to save item(6)~(16) settings change. The auto save function acts when
   i. Mode and adjustment change immediately.
   ii. Mode persists and function adjustment changes at 10 seconds later.
2. FOR TECHNICIAN ONLY : The monitor provides another save methode to save settings into factory standard area of EEPROM for technician only.
   i. Factory standard area of EEPROM has stored the factory settings for user recall.
   ii. If it is necessary to change the EEPROM factory standard area's setting, press and rotate the Encoder to select (Information of the mode), then simultaneous press The Standby Power key and the Encoder 2 seconds. All symbols of the OSD windows changes color.
   iii. The "new icon" function means as following:
      1) Contrast = H-Linearity Adjust
      2) Brightness = H-Dynamic Focus Adjust
      3) V-size = R-cutoff Adjust
      4) V-center = G-cutoff Adjust
      5) H-width = B-cutoff Adjust
      6) H-phase = R-gain Adjust
      7) Pincushion = B-gain Adjust
      8) Trapezoid = 9300°K Save
      9) Balance = 6500°K Save

10) ▱ Parallel = Save All
11) ▭ Rotation = Recall All
12) ▨ Moire = Use's Mode Erase
13) Degaussing = Relay Test
14) Recall = Check List

(18) REPEAT ITEM (6) TO (16) AND CHANGE MODE 1 TO 10 IN SEQUENCE

(19) H-LINEARITY ADJUSTMENT

1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select H-Linearity.
3. Press and rotate the Encoder to adjust H-Linearity is best. (See Fig 12).
   $L = A_{max} - A_{min} / A_{av} \leq 7\ \%$
   $A_{av} = A_1 + A_2 + \ldots\ldots A_n / n$

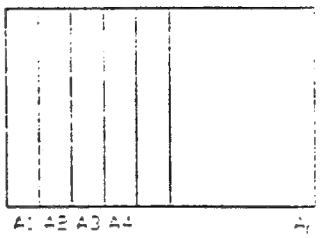


Figure 12

(20) H-DYNAMIC FOCUS ADJUSTMENT

1. Set Video Signal Generator to MODE 1 (Crosshatch Pattern) and input to monitor. (Mode may be changed 1 to 10 in sequence)
2. Press and rotate the Encoder to select H-Dynamic Focus.

(21) RASTER WHITE BALANCE (RASTER COLOR TEMPERATURE) ADJUSTMENT

1. Set Video Signal Generator to MODE 7 (60 KHz Raster Pattern) and input to monitor.
2. Press and rotate the Encoder to select Degussing .
3. Press the Encoder to correct display distortion or discoloration due to magnetic field interference.
4. Press and rotate the Encoder to set Contrast ◑ and Brightness ☼ to MIN.
5. Adjust the Screen VR of FBT until the raster can be visible.
6. Check the pictur showing what king color is.
7. Adjust the R-cutoff, G-cutoff and B-cutoff without showing the color on the picture until the color analyzer appear:
   x=0.281 ± 5 % (For 9300°K)
   y=0.311 ± 5 %
8. Adjust the Screen VR of FBT to let raster = 1.0 ~ 1.2 FL.
9. Check the raster keep in range 1.0 ~ 1.4 FL. When adjust raster color temperature.
10. Check Item 5.~8. again.

(22) WHITE BALANCE (COLOR TEMPERATURE) ADJUSTMENT

1. Set Video Signal Generator to MODE 7 (60 KHz Bright Pattern) and input to monitor.
2. Set the Contrast Y = 20~25 FL.
3. Set the Brightness to cutoff.
4. Press and rotate the Encoder to select R-gain and G-gain.
5. Adjust the Encoder until the color analyzer appear:

x=0.281 ± 5 %
y=0.311 ± 5 %

6. Set the Contrast to MAX and check the color temperature. If color temperature over the specification, repeat steps 2.~11.
7. Press and rotate the Encoder to select 9300°K Save.
8. Repeat Item (21), (22) steps.
9. Adjust the R/G/B-cutoff and R/G-gain until the Color Analyzer appear:
   x=0.313 ± 5 % (FOR 6500°K)
   y=0.329 ± 5 %
10. Press and rotate the Encoder to select 6500°K Save.

(23) BRIGHTNESS ADJUSTMENT

1. Set Video Signal Generator to MODE 2 (31 KHz Raster Pattern) and input to monitor.
2. Make sure video input = 0.7 V_{P-P}.
3. Set the Contrast to MIN and the Brightness to Max.
4. Check raster = 1.0~1.4 FL by adjust FBT screen VR).
5. Press and rotate the Encoder to select Brightness and let raster = 1.0 ± 0.05 FL.
6. Set to full white pattern, check CRT center picture = 1.5~3 FL.
7. Set Contrast to Max.
8. Set 1-MOSAIC(3") pattern.
9. Adjust VR601(sub-contrast) let CRT center block keep in range 50~60 FL. Factory sets 55 FL.
10. Set Video Signal Generator to High level input(0.90 V_{P-P})
11. Check the screen.

(24) ABL ADJUSTMENT(VR02)

1. Set Video Signal Generator to MODE 2 (31 KHz Full White Pattern) and input to monitor.
2. Make sure video input = 0.7 V_{P-P}.
3. Adjust VR404(clockwise) let picture center = 30 FL (30 ± 5 FL).
4. Check the picture around lights up to 70%.

(25) FOCUS ADJUSTMENT

1 Set Video Signal Generator to MODE 10 (93K White Pattern) and input to monitor.
2 Press and rotate the Encoder to set Brightness to MIN make raster = 0 FL.
3 Set Contrast Y = 20~25 FL.
4. Change Video Signal Generator to MODE 10 (93K "H" Pattern)
5. Adjust FBT FOCUS VR to make the CRT display clear.

(26) CONVERGENCY ADJUSTMENT

1. Set Video Signal Generator to MODE 2 (31 KHz Purple Crosshatch Pattern) and input to monitor.
2. Check red and blue color of picture center is overlap or not. If it is not overlap, adjust 4 magnetic pole of CRT YOKE.
3. Set Video Signal Generator to MODE 2 (31 KHz White Crosshatch Pattern) and input to monitor.
4. Check red, green and blue color of picture center is overlap or not. If it is not overlap, adjust 6 magnetic pole of CRT YOKE.

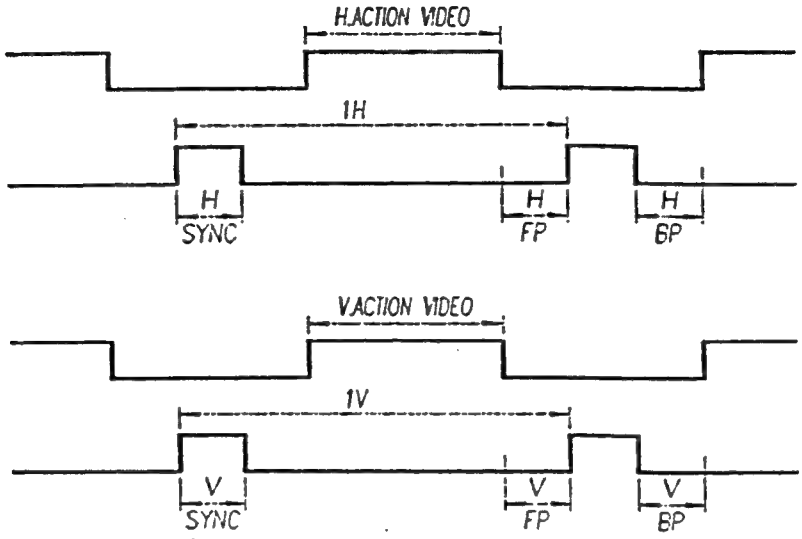
5. Fasten and glue magnetic pole tight, if you adjust it.

(27) POWER SAVING CHECK

1. Equipment: Video Signal Generator
   i. Quantum Data Model 901
   ii. Chroma Model 2135
2. Set Stand-by, Suspend and Off states into equipment as following.
   i. Stand-by state ⇒ H-sync ≤ 10K Hz
   ii. Suspend state ⇒ V-sync ≤ 10 Hz
   iii. Off state ⇒ H-sync ≤ 10K Hz and V-sync ≤ 10 Hz
3. AC power input: 100 to 240 Vac 60/50 Hz.
4. Set Video Signal Generator(Chroma 2135) to Stand-by and input to monitor. Check power consumption below 15W in 5 seconds.
5. Set Chroma 2135 to MODE 2 and check the display is normal in 3 seconds.
6. Set Chroma 2135 to Suspend and check power consumption below 15W in 5 seconds.
7. Set Chroma 2135 to MODE 2 and check the display is normal in 3 seconds.
8. Set Chroma 2135 to Off and check power consumption below 5W in 5 seconds.
9. Set Chroma 2135 to MODE 2 and check the display is normal.

DISPLAY MODE & TIMING CHART

This monitor provides 13 preset modes for match normal display card and 12 user's modes for special display card. As below chart and table are showing the detail value of preset mode. Please service technician accords table to set video signal generator for input/test/adjust the monitor.



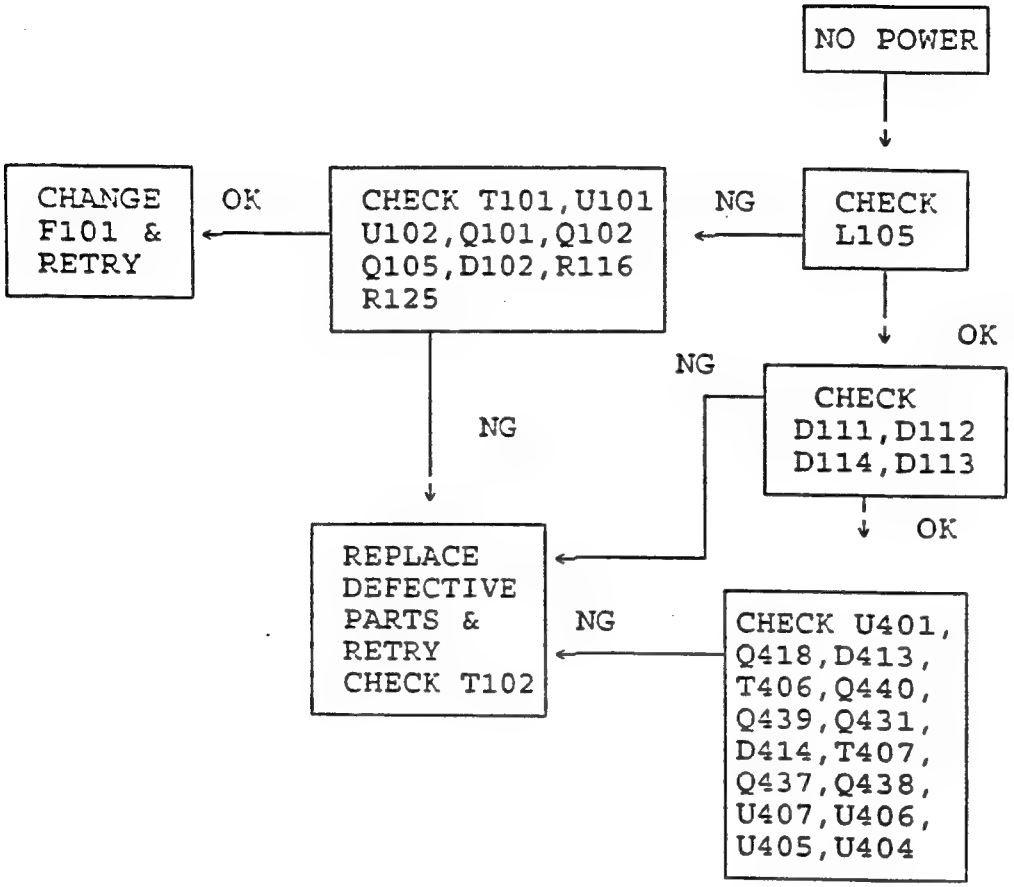
Standard	IBM/VGA	IBM/VGA	VESA	VESA
Compatibility	MODE 1	MODE 2	MODE 3	MODE 4
Resolution	640x400	640x480	640x480	640x480
H. Polarity	—	—	—	—
H. Frequency	31.469 kHz	31.469 kHz	37.500 kHz	43.269 kHz
H. Front Porch	0.636 μs	0.318 μs	0.508 μs	1.556 μs
H. Sync	3.813 μs	3.813 μs	2.032 μs	1.556 μs
H. Back Porch	1.907 μs	1.589 μs	3.810 μs	2.222 μs
H. Action Video	25.422 μs	25.422 μs	20.317 μs	17.778 μs
V. Polarity	+	—	—	—
V. Frequency	70.086 Hz	59.940 Hz	75.000 Hz	75.000 Hz
V. Front Porch	0.381 ms	0.064 ms	0.027 ms	0.023 ms
V. Sync	0.064 ms	0.064 ms	0.080 ms	0.069 ms
V. Back Porch	1.112 ms	0.794 ms	0.427 ms	0.578 ms
V. Action Video	12.711 ms	15.571 ms	12.800 ms	11.093 ms

Standard	VESA	VESA	VESA	VESA
Compatibility	MODE 5	MODE 6	MODE 7	MODE 8
Resolution	800x600	800x600	1024x768	1024x768
H. Polarity	+	+	+	+
H. Frequency	46.875 kHz	53.674 kHz	60.000 kHz	68.677 kHz
H. Front Porch	0.323 μs	0.569 μs	0.203 μs	0.508 μs
H. Sync	1.616 μs	1.138 μs	1.219 μs	1.106 μs
H. Back Porch	3.232 μs	2.702 μs	2.235 μs	2.201 μs
H. Action Video	16.162 μs	14.222 μs	13.003 μs	10.836 μs
V. Polarity	+	+	+	+
V. Frequency	75.000 Hz	85.061 Hz	75.029 Hz	84.997 Hz
V. Front Porch	0.021 ms	0.019 ms	0.017 ms	0.015 ms
V. Sync	0.064 ms	0.056 ms	0.050 ms	0.044 ms
V. Back Porch	0.448 ms	0.503 ms	0.466 ms	0.524 ms
V. Action Video	12.800 ms	11.179 ms	12.795 ms	11.183 ms

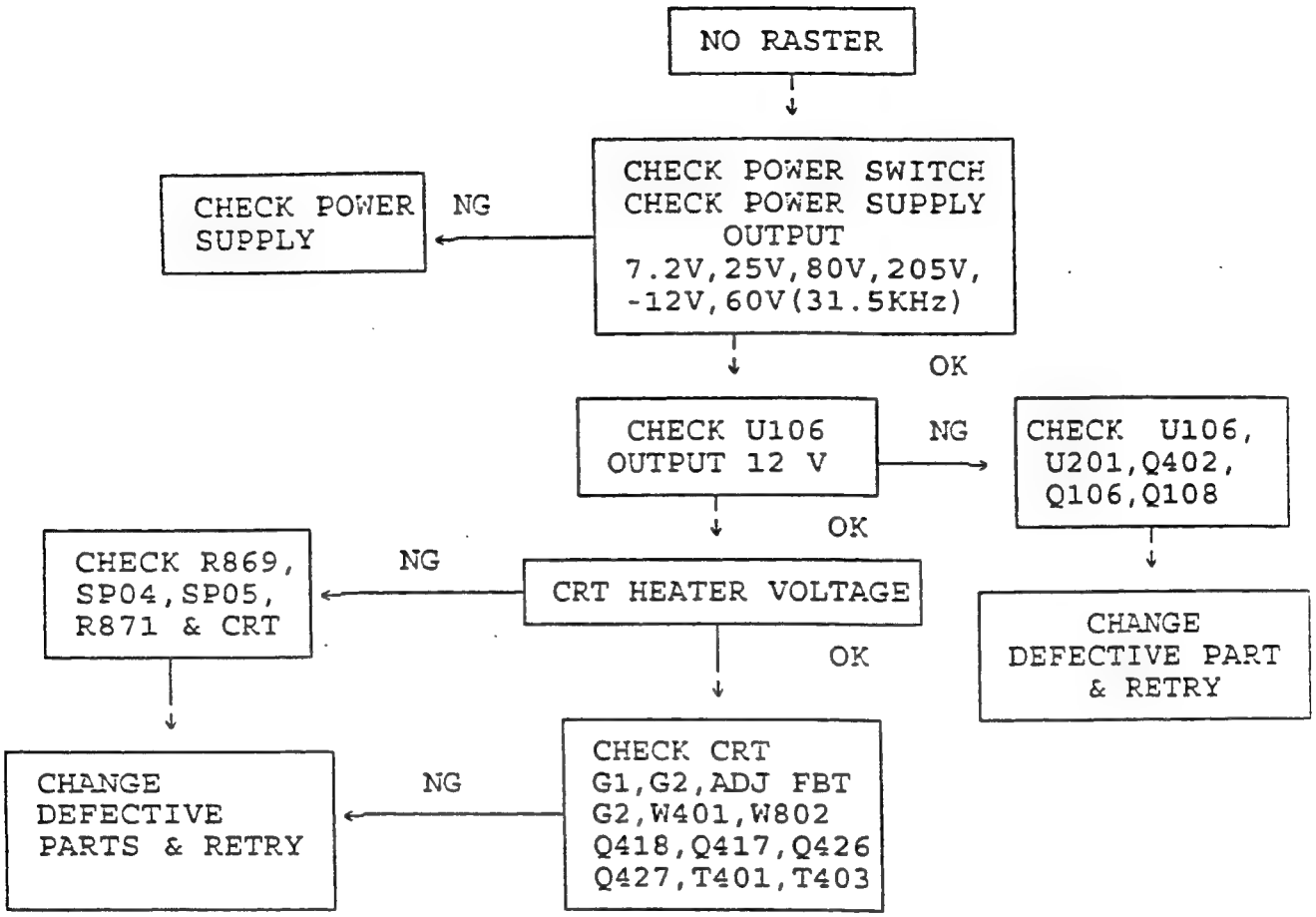
Standard	VESA	VESA
Compatibility	MODE 9	MODE 10
Resolution	1280x1024	1280x1024
H. Polarity	+	+
H. Frequency	79.976 kHz	93.750 kHz
H. Front Porch	0.119 μs	0.316 μs
H. Sync	1.067 μs	0.948 μs
H. Back Porch	1.837 μs	1.501 μs
H. Action Video	9.481 μs	7.901 μs
V. Polarity	+	+
V. Frequency	75.025 Hz	75.000 Hz
V. Front Porch	0.013 ms	0.010 ms
V. Sync	0.038 ms	0.032 ms
V. Back Porch	0.475 ms	0.491 ms
V. Action Video	12.804 ms	12.800 ms

TROUBLESHOOTING

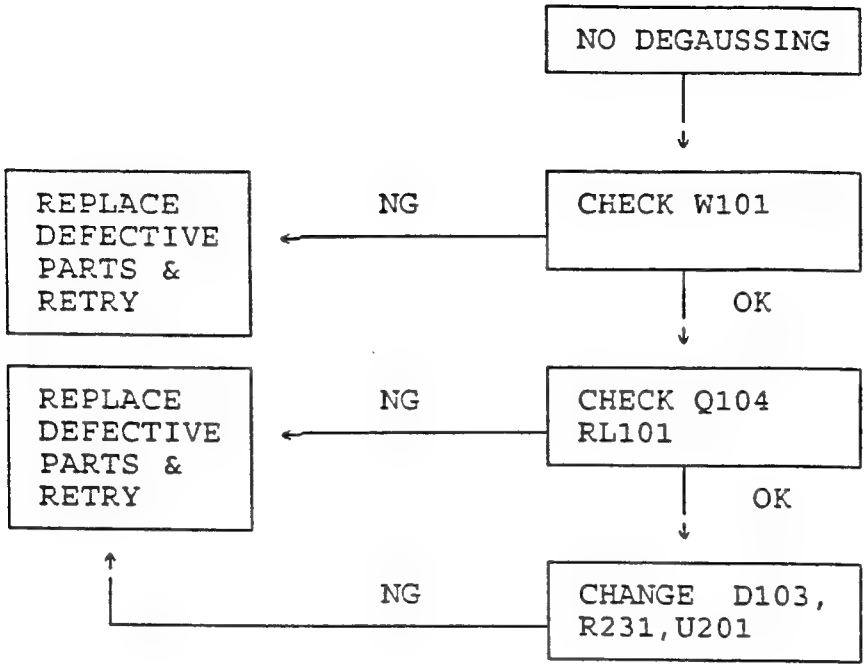
1. NO POWER



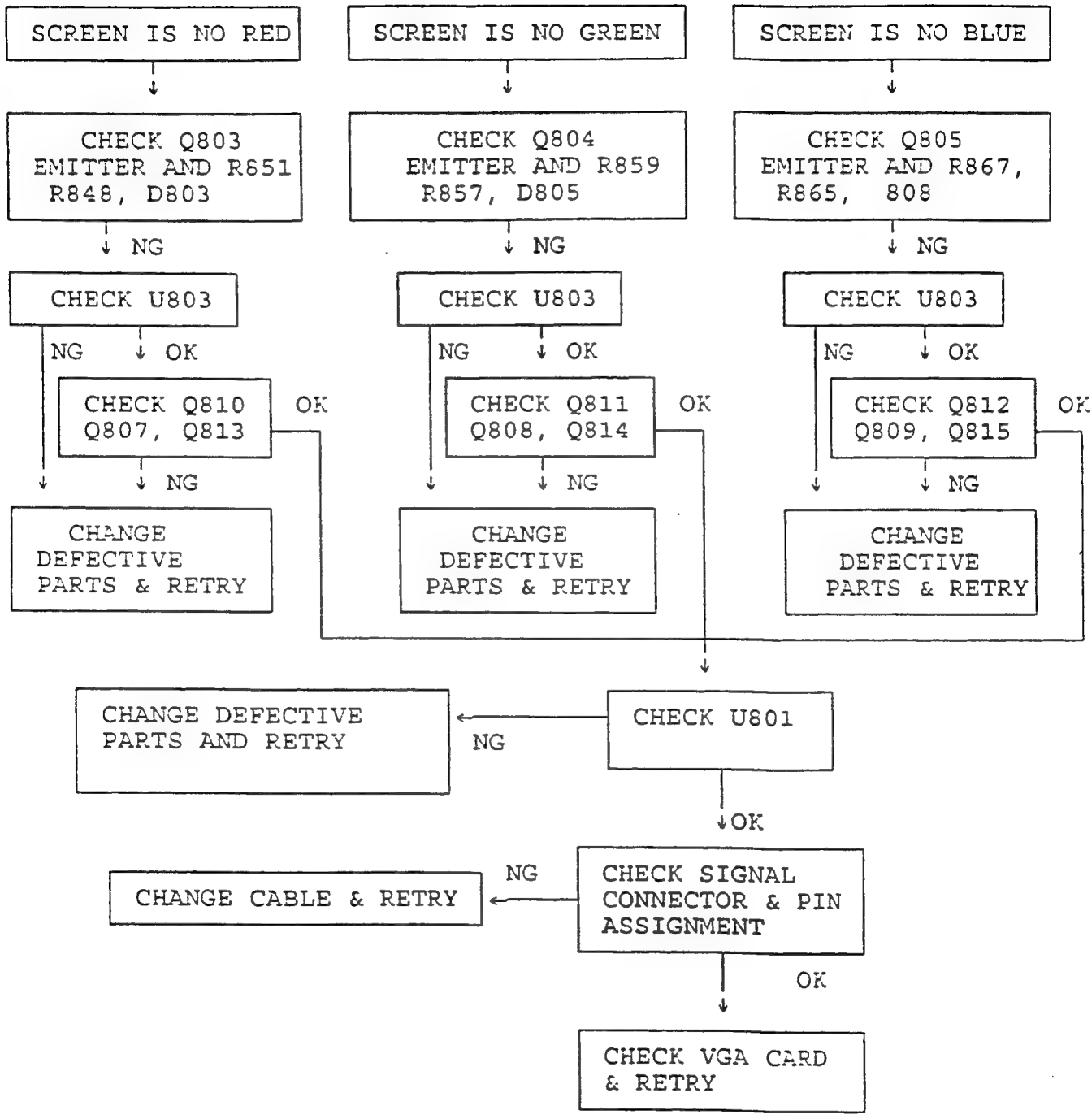
3. NO RASTER


NO RASTER
CHECK POWER SWITCH
CHECK POWER SUPPLY OUTPUT
7.2V,25V,80V,205V,
-12V,60V(31.5KHz)
NG
CHECK POWER SUPPLY
OK
CHECK U106 OUTPUT 12 V
NG
CHECK U106, U201,Q402, Q106,Q108
OK
CHECK R869, SP04,SP05, R871 & CRT
NG
CRT HEATER VOLTAGE
OK
CHANGE DEFECTIVE PART & RETRY
CHANGE DEFECTIVE PARTS & RETRY
NG
CHECK CRT G1,G2,ADJ FBT G2,W401,W802 Q418,Q417,Q426 Q427,T401,T403

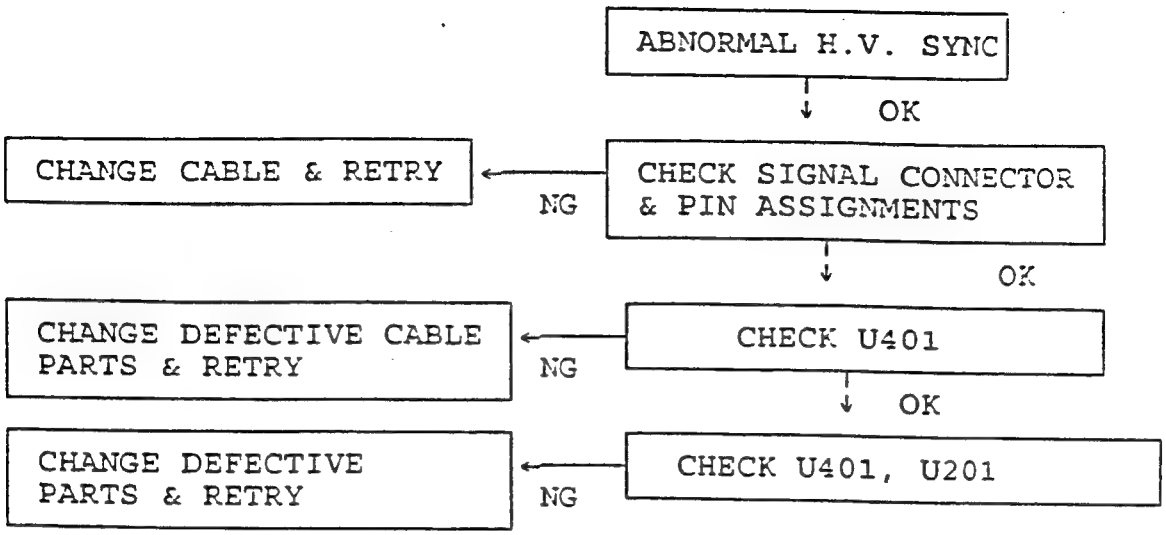
2. NO DEGAUSSING



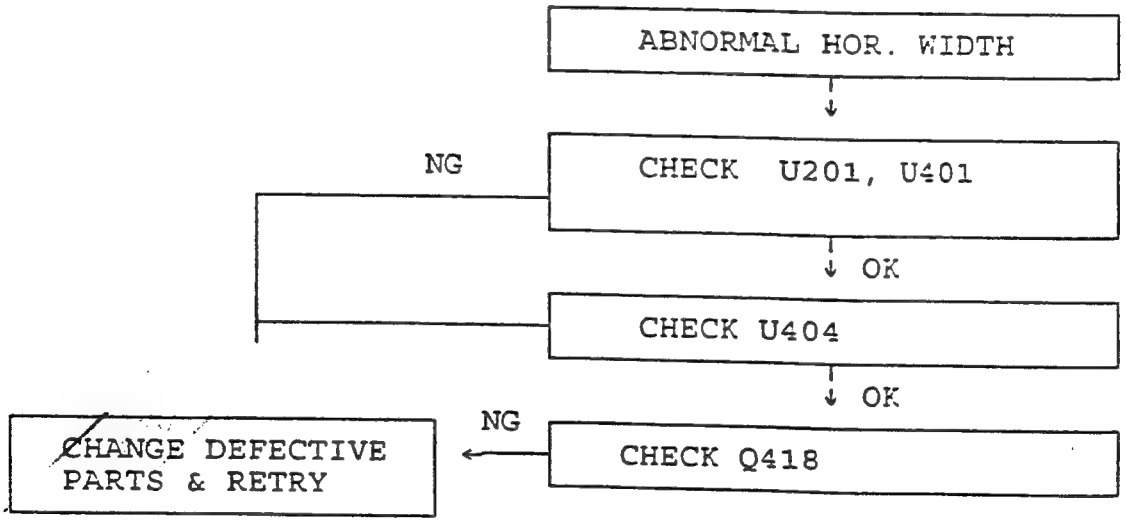
4. PICTURE OR COLOR MISSING



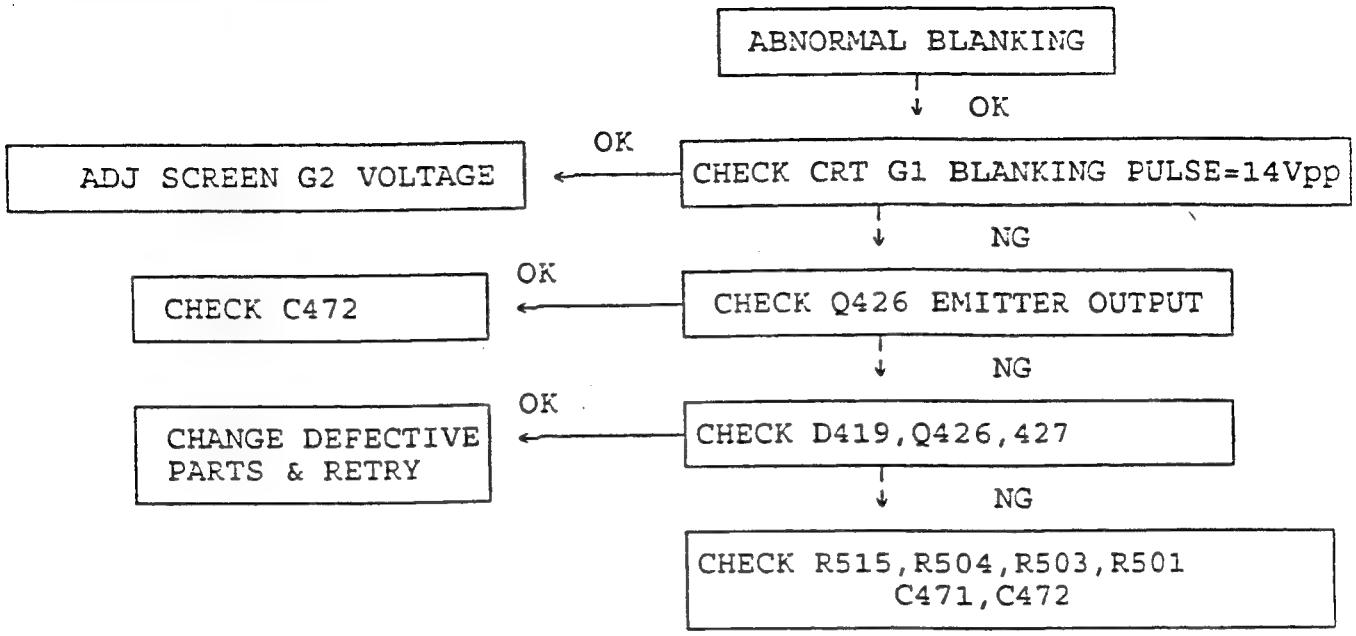
5. H.V. SYNC IS ABNORMAL



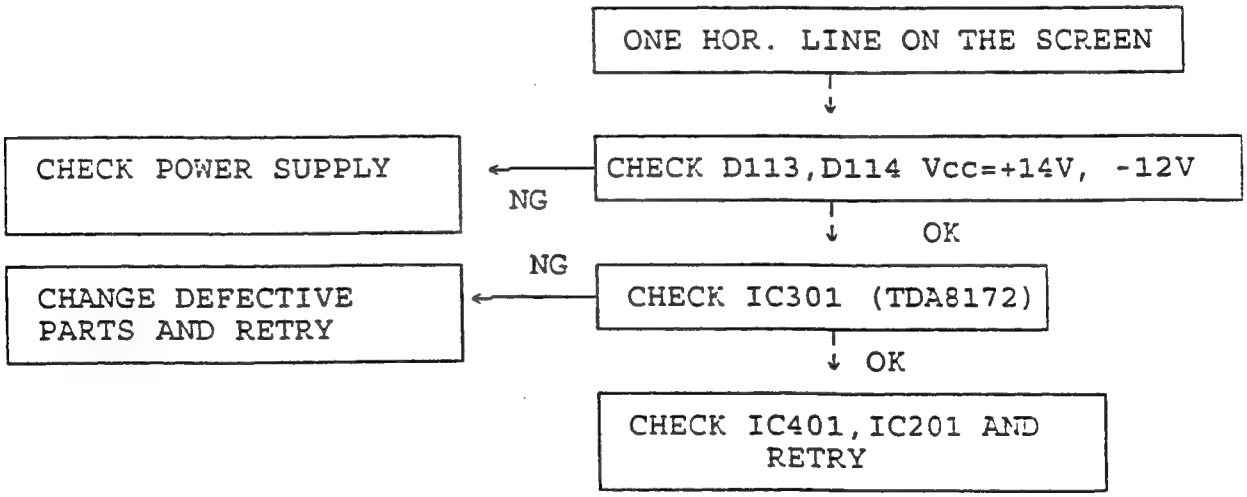
6. HOR. WIDTH CAN NOT ADJUST



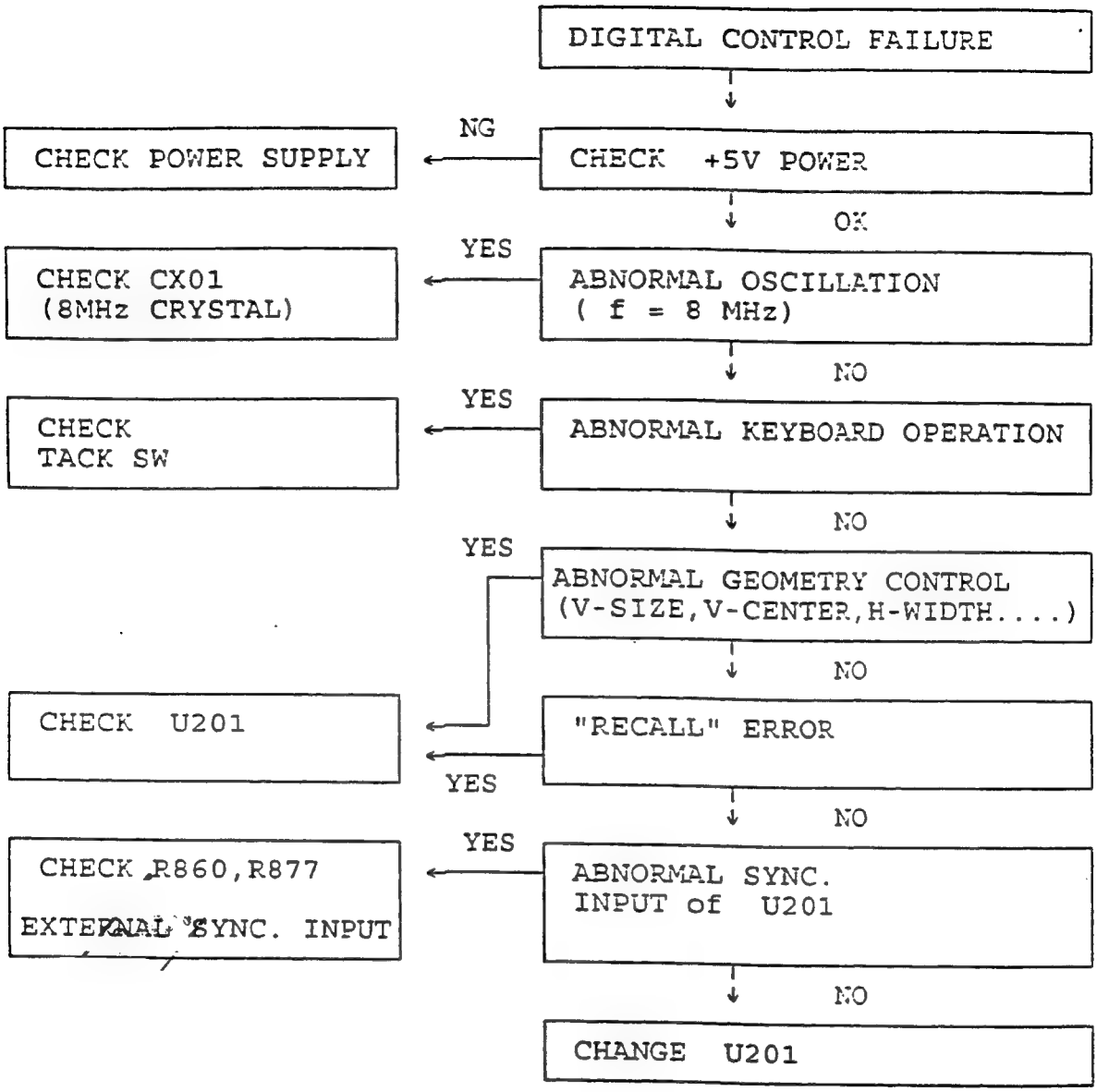
7. ABNORMAL BLANKING



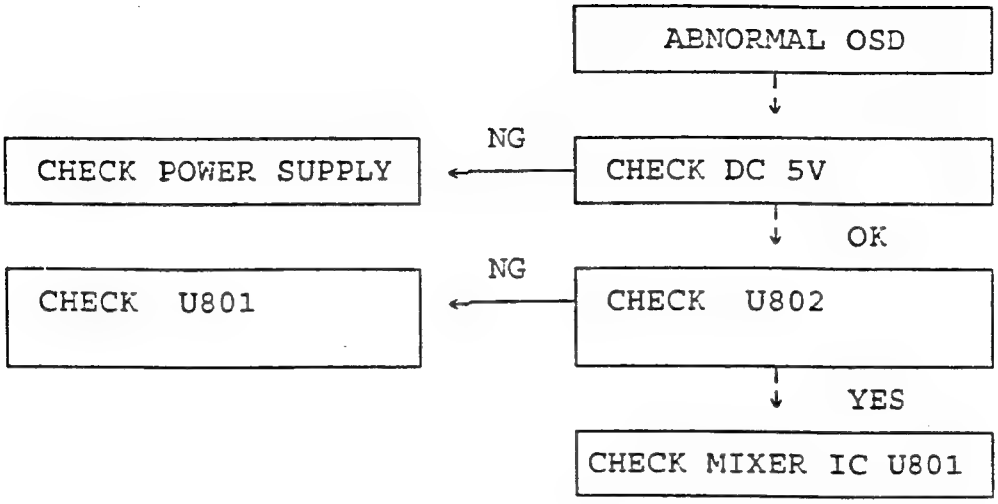
8. NO VERTICAL SCAN OR VERTICAL SIZE CAN NOT ADJUST



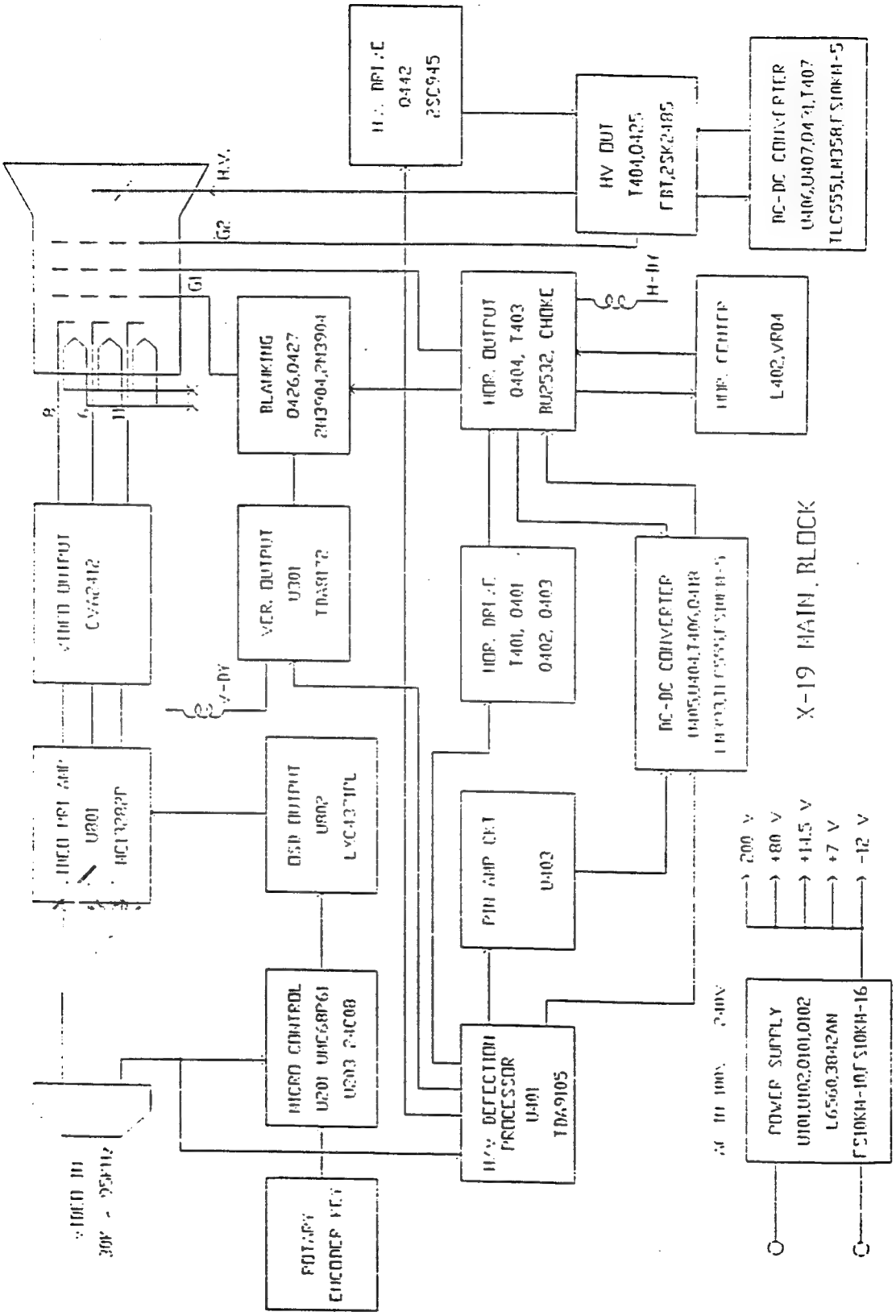
9. DIGITAL CONTROL FAILURE



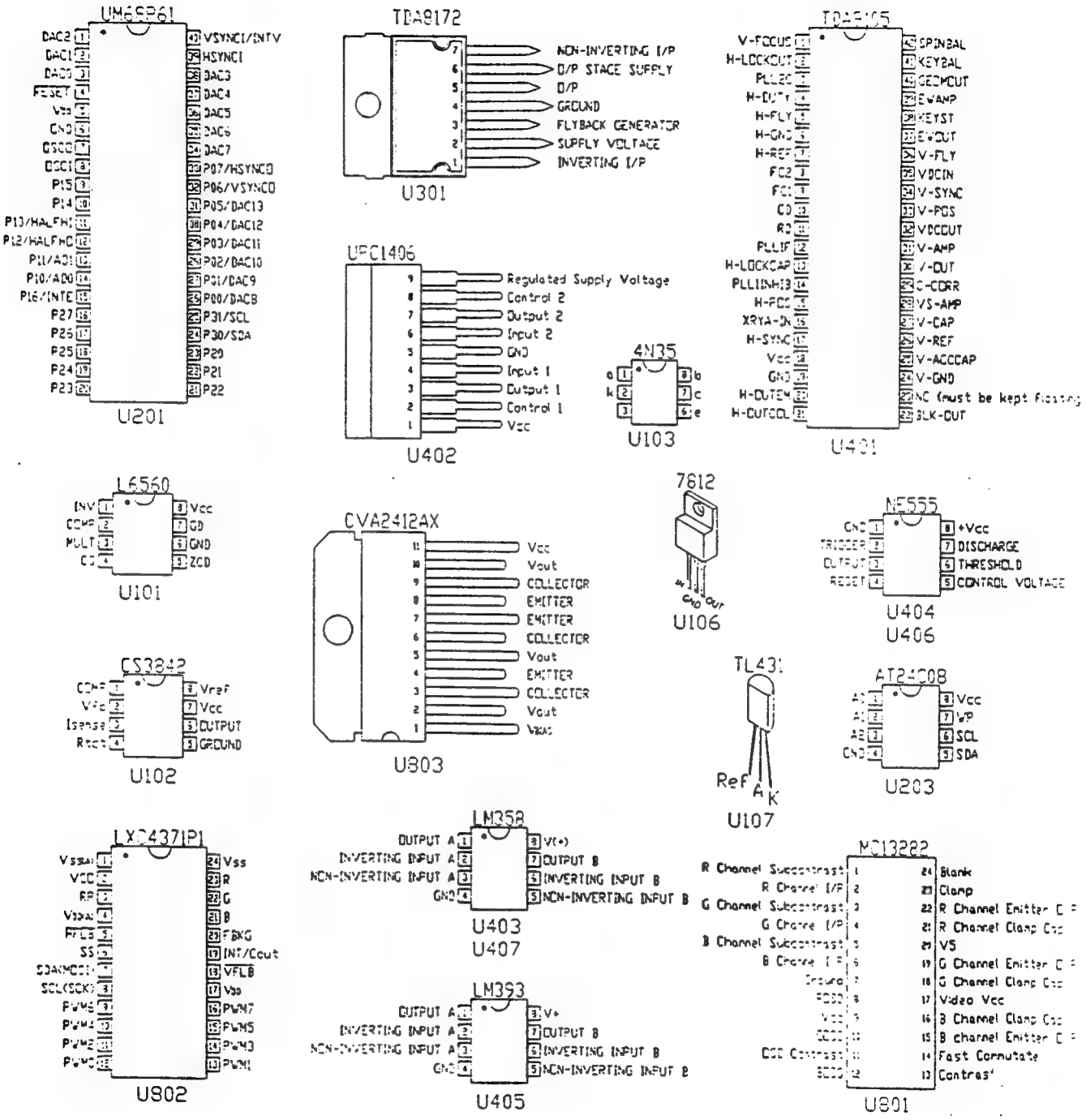
10. ABNORMAL OSD



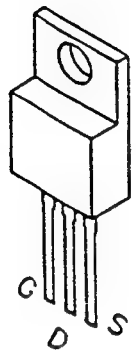
BLOCK DIAGRAM



IC/TRANSISTOR BLOCK DIAGRAMS

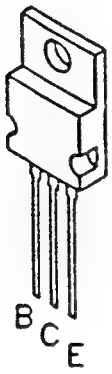


FS10KM-10



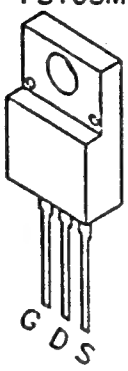
Q101

BU2532AL



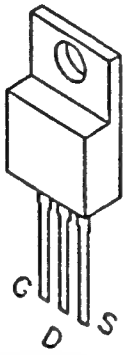
Q404

FS10SM-16



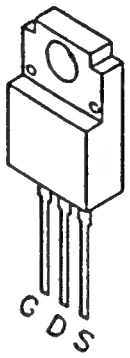
Q102

IRF640



Q406
Q408
Q410

K2485



Q425

A1480

Q422

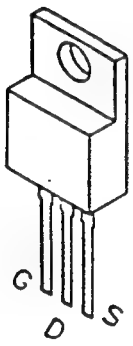
C3790

Q419
Q421

2B772

Q414
Q106
Q109

FS10KM-5



Q412
Q418
Q431

A830

Q815
Q814
Q813

K941

Q403

A916

Q432

2N3904

Q427
Q426

BF423

Q803
Q804
Q805
Q435

PH2369

Q810
Q811
Q812

C2705

Q807
Q808
Q809

C1384

Q103

MCR100-6

Q107

HTL145

Q423
Q415

B772

Q106

A733

Q402 Q439
Q204 Q436
Q105 Q806
Q437

MPSA13

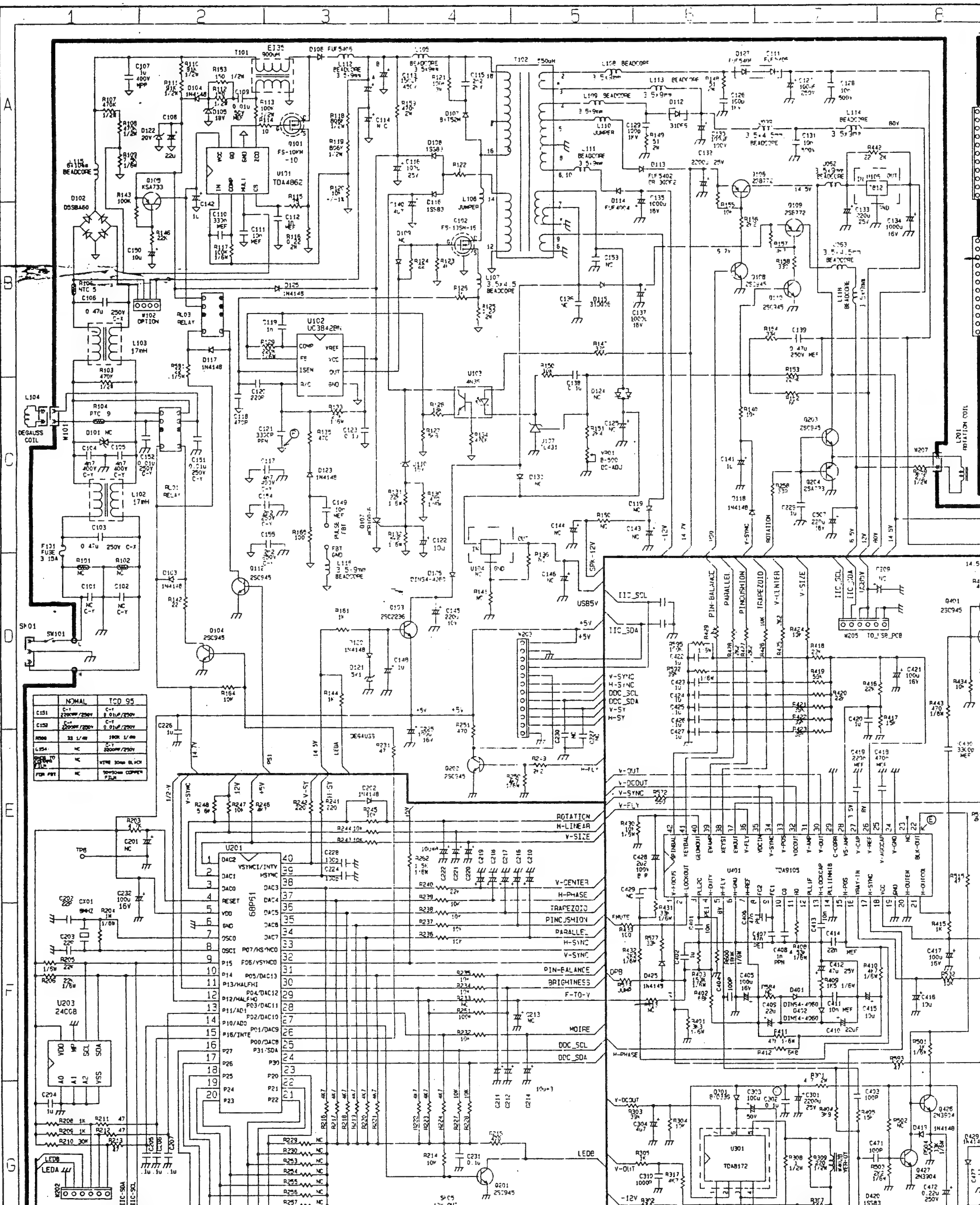
Q405
Q415
Q405

C3402

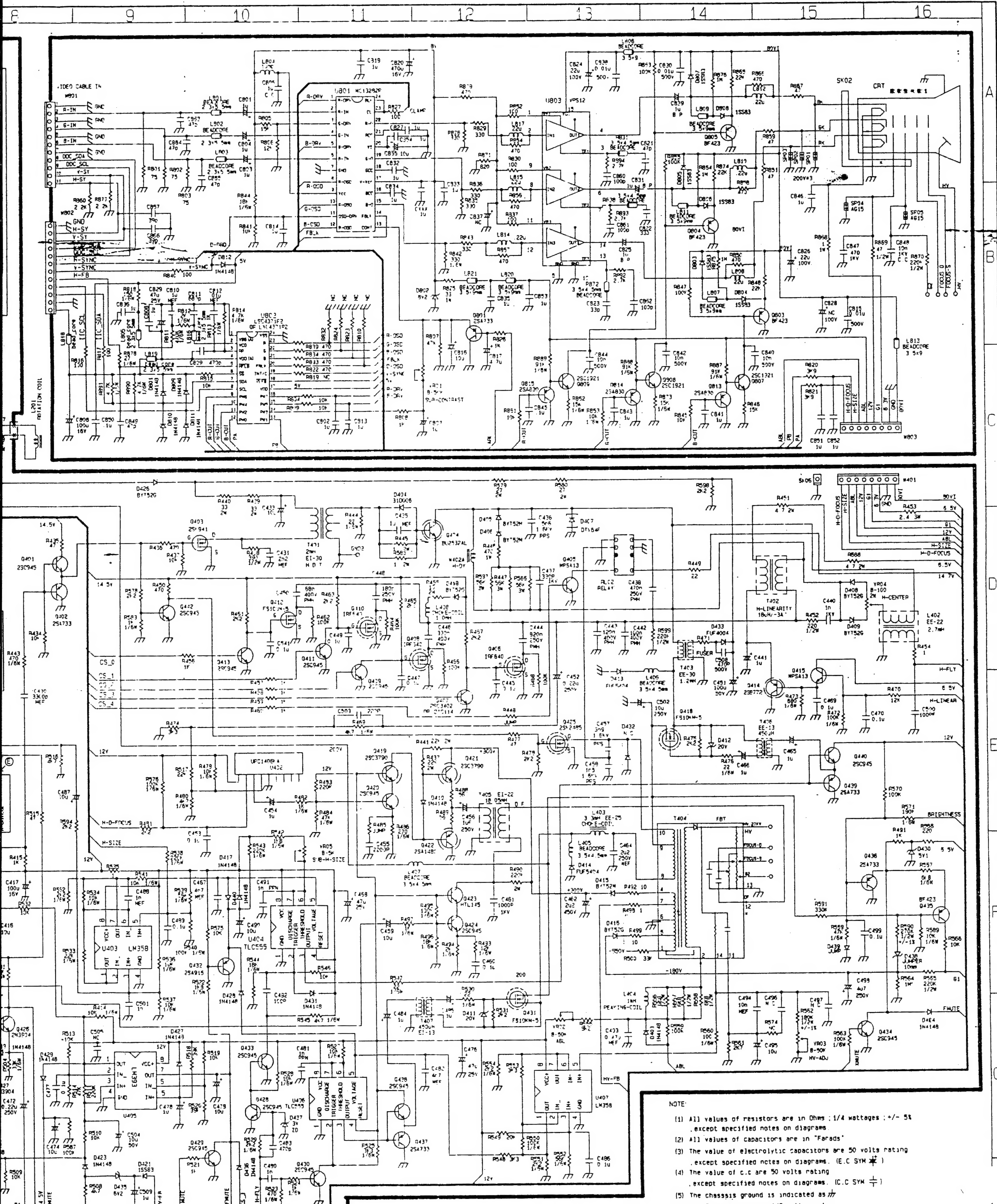
Q407
Q421

C945

Q112 Q440 Q442
Q104 Q429 Q413
Q201 Q424 Q411
Q401 Q108 Q409
Q301 Q202 Q420
Q110 Q434 Q430



U101 TDA4862
U102 UC3842BN
U103 4N35
U201 68P51
U203 24C08
U301 TDA8172
U401 TDA9105
DEGAUSS COIL
ROTATION COIL
RELAY
FUSE
SW101
SW02 A/B-KEY ENTER
D201 LED
W205 TO USB PCB
ROTATION
H-LINEAR
V-SIZE
V-CENTER
H-PHASE
TRAPEZOID
PINCUSHION
PARALLEL
H-SYNC
V-SYNC
PIN-BALANCE
BRIGHTNESS
F-TO-V
MOIRE
DDC_SCL
DDC_SDA
LEDB
LEDA
IIC_SCL
IIC_SDA
V-OUT
V-DCOUT
V-FLY
NOMAL
TCO 95
A 140 Vpp
B 9 Vpp
C 1.6 Vpp
D 46 Vpp
E 11.6 Vpp
F 12 Vpp
G 12 Vpp
H 4.5 Vpp
I 240 Vpp
J 4.8 Vpp
K 40 Vpp
L 180 Vpp
M 14 Vpp
110V AC INPUT



NOTE:

(1) All values of resistors are in Ohms ; 1/4 wattages ; +/- 5%
 , except specified notes on diagrams.

(2) All values of capacitors are in "Farads"

(3) The value of electrolytic capacitors are 50 volts rating
 , except specified notes on diagrams. (E.C SYM)

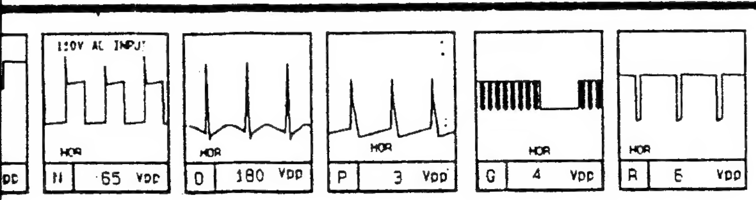
(4) The value of c.c are 50 volts rating
 , except specified notes on diagrams. (C.C SYM)

(5) The chasssis ground is indicated as

(6) The Zener diodes are 1/2 wattages type.

(7) The varied resistor are +/- 20% , 1/2 wattages type

(8) ALL capacitors which are not otherwise specified are 85 C type.



MAIN PCB REV: 2.3

CRT PCB REV: 2.0

H-FREQ	CS_0	CS_1	CS_2	CS_3	CS_4	PS-0	PS-1
OVERRIDE	0	0	0	0	1	1	1
H<29KHz	1	0	0	0	1	0	0
29KHz<H<33KHz	1	0	0	0	1	1	1
33KHz<H<41KHz	1	1	1	0	1	1	1
41KHz<H<44.5KHz	0	1	0	1	1	1	1
44.5KHz<H<50.5KHz	0	0	1	1	1	1	1
50.5KHz<H<58.5KHz	1	1	1	1	1	1	1
58.5KHz<H<66KHz	1	1	0	1	0	1	1
66KHz<H<78KHz	1	0	1	1	0	1	1
78KHz<H<90KHz	0	1	1	1	0	1	1
90KHz<H<95KHz	1	1	1	1	0	1	1
95KHz<H<100KHz	1	1	1	1	0	0	0
100KHz<H<108KHz	1	1	1	1	0	0	0
108KHz<H	1	1	1	1	0	0	0
STAND-BY	1	1	1	1	0	0	1
OFF MODE	1	1	1	1	0	0	0

10 60 20

MODEL: X-19M&X-19V	SHEET NO.	DESIGN	DRAWING
ITEM: MAIN/CRT	DATE: JUN/23/1998	PREPARE	SU.CHING.PAN
FILE NAME: X19MV-18	SCH REV: 1.8	CHECKED	Jim.Tsai-M
ECN NO:		APPROVED	

MPORTANT SERVICE SAFETY INFORMATION

)peration of monitor outside of cabinet or with back removed involves a hock hazard. Work on these models should only be performed by those /ho are thoroughly familiar with precautions necessary when working n high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B lus and high voltage RF terminals are exposed which, if carelessly ontacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis and scutcheon picture tube dag when operating chassis.

This monitor has a "polarized" AC line cord.The AC plug is designed to it into standard AC outlets in one direction only. The wide blade connects the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the monitor is properly grounded o the house wiring. If an extension cord must be used,make sure it is of he "polarized" type.

Since the chassis of this monitor is connected to one side of the AC supply during operation,service should not be attempted by anyone not familiar with the precautions necessary when working on this type of equipment.

en it is necessary to make measurements or tests with AC power applied to the monitor chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damaged transistors. The Isolation Transformer should be connected between the signal cord plug and the AC power outlet.

Certain HV failures can increase X-ray radiation. Monitors should not be operated with HV levels exceeding the specified rating for their chassis type. The maximum operating HV specified for the chassis used in these monitors is 24kv ± 1.0kv at zero beam current with a line voltage of 110V(220V) AC. Higher voltage may also increase possibility of failure in HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the monitor that could cause a rise in high voltage, or operating supply voltages, No changes should be made to the original design of the monitor.

Components shown in the shaded areas on the schematic diagram and/or identified by ⊥ in the replacement parts list should be replaced only with exact Factory recommended replacement parts. The use of unauthorized substitute parts may create a shock, fire , X-radiation, or other hazard.

To determine the presence of high voltage, use an accurate, high impedance, HV meter connected between second anode lead and the CRT dag grounding device. When servicing the High Voltage System remove static charge from it by connecting 10K ohm resistor in series with an insulated wire (such as a test probe) between picture tube dag and 2nd anode lead (AC line cord disconnected from AC supply).

The picture tube used in this monitor employs integral impulsion protection. Replace with tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely. Keep others without shatterproof goggles away.

Before returning the monitor to the user, perform the following safety checks:

1. Inspect all lead dress to make certain thay are not pinched or lodged between the chassis and other metal parts in the monitor.

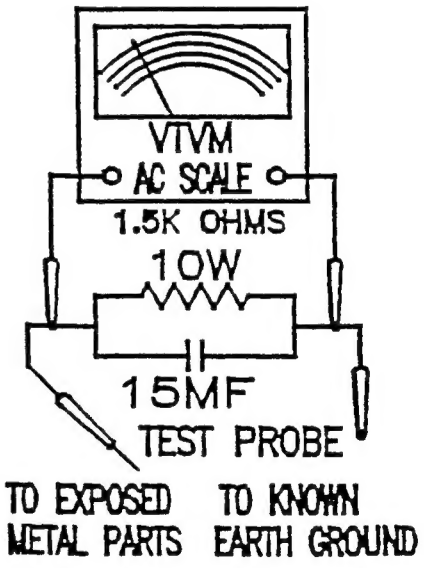
2. Replace all protective devices such as non-metallic control knobs, insulating fish-papers, cabinet backs, adjustment and compartment covers or shields, isolation resistor capacitor networks, mechanical insulators, etc.

3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (cabinet metal,screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 110V(220V) AC receptacle (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed.(If necessary, a non-polarized adapter plug must be used only for the purpose of completing these checks.)

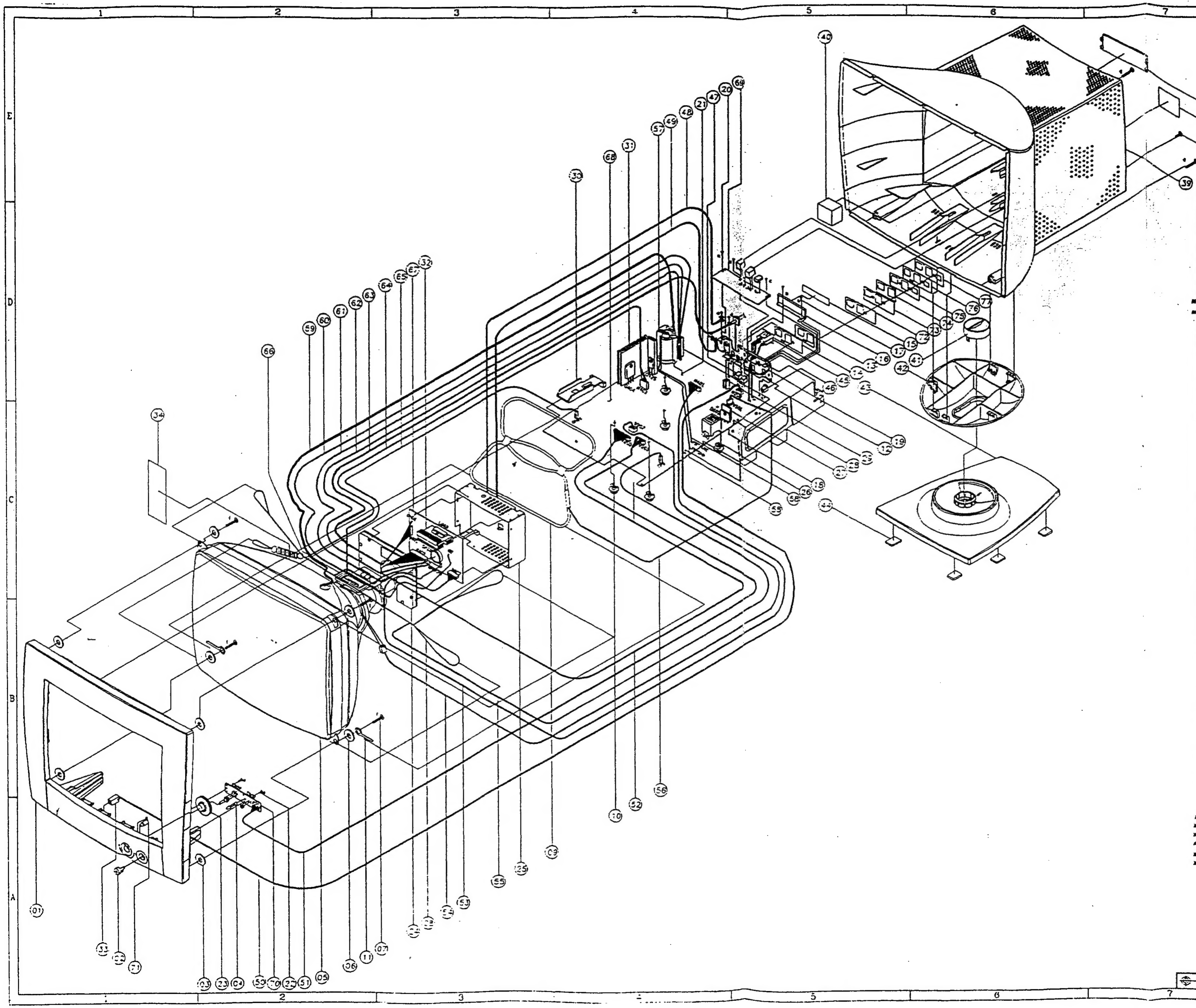
If available, measure current using an accurate leakage current tester. Any reading of 0.35 MA or more is excessive and indicates a potential shock hazard which must be corrected before returning the monitor to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15 μF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the monitor to the owner.



CONTENTS

EXPLODED VIEW/PARTS LIST



REVISION			
DATE	MARK	DESCRIPTION	REV. BY

Item	Part No	Description	
01	2F0N3N01N9	FRONT PANEL ABS 94-5V G7139	1
02	2F0N3N13N3	POWER BUTTON ABS 94-5V G7139	1
03	3L021N12N9	RUBBER WASHER Ø7*Ø20.5*2.5	4
04	2F012N33N5	LED HOLDER DL-17M	1
05	XHG5621C04	CRT 19" M46LLD683X01-S 26mm	1
06	4T522N48N1	SPRING WASHER ID052*OD022*1.0T	4
07	4T525N06N7	SCREW TAP Ø5*25mm NI	4
08	NEBRAIDW19	BRAID WIRE ASS'Y	1
09	LGCx19**19	DEGAUSSING COIL	1
10	2F009N33N9	PCB SPACER SUPPORTS	5
11	1T070A43N6	LOCKING CABLE CLIPS 4*75mm Ø5.1)	2
12	1T152A23N1	BRACKET REAR	1
※ 13	3L096N09N7	BACK PLATE(AC SW+MIC IN OUT+DC OUT)	0
※ 14	3L133B09N0	BACK PLATE(MIC IN OUT)	0
15	3L090B09N9	BACK PLATE(USB PLATE)	1
16	3L090N50N6	USB BRACKET	1
17	4T408N03N5	SCREW ISO Ø4*8mm NI(USB BRK'T)	0
18	4T308N01N4	SCREW TAP Ø3*8mm W/H NI	2
19	4T408N03N5	SCREW ISO Ø4*8mm NI	3
20	4T408N03N5	SCREW ISO Ø4*8mm NI(USB PCB)	0
21	4T312N09N7	SCREW Ø3*12 TP-2 W/H ZNC	1
22	4T310W01N6	SCREW Ø3*10 TP-2 W/H NI	2
23	2F0N3N03N9	KNOB PUSH ROTARY ABS 94-5V G7139	1
24	1T167N26N6	SHIELD CRT F	1
25	1T166A26N5	SHIELD CRT R	1
26	1T143N26N5	SHIELD TRANS T101	1
27	1A025N14N4	HEAT SINK D102	1
28	1T255N26N2	SHIELD TCO	0
29	1T0K2A43N4	BRACKET GROUND A	1
30	1T035N49N1	BRACKET DEGAUSSING	1
31	1A110N13N9	L FIXITY X-19 W110*85*36.5	1
32	1A045D14N6	AL EXTRUDE-C(KSN) 45H*40Lmm U503	1
33	2P022N09N7	RUBBER MIC	1
34	3L100011N0	CRT WARNING LABEL	1
35	4T309N45N0	SCREW ISO Ø3*9mm B-HEAD	1
36	4T420Y06N6	SCREW TAP Ø4*20	2
37	3LV99M08N7	RATING LABEL A	1
38	2F120N42N3	REAR COVER	1
39	2F0N3N02N4	REAR CASE ABS 94-5V G7139	1
40	3K050B31N5	SPONG 50mm*50mm*50mm 30X	1
41	2F0K2D06N9	LOCKER ABS 94HB	1
42	2P0N3N06N4	SWIVEL DISK ABS 94HB G7139	1
43	2P013N07N4	SWIVEL BASE ABS 94HB G7139	1
44	3L016C12N5	RUBBER FOOT 12*16*4.5T	4
45	BSA10300*2	AC SOCKET 3P	1
46	BUA111C033	DC POWER JACK	1
47	BUA1110038	STEREO/P JACK	2
48	KD1500W010	BRAID WIRE 150mm-SHIELD CRT TO REAR BRK'T	1
49		WIRE -SHIELD CRT TO REAR BRK'T	1
50	KCB2941047	WIRE 2P MIC 530mm MAIN/P W208	1
51	KCC6191028	WIRE 6P POWER/P W201-MAIN/P W202	1
52	KCC8191020	WIRE 12P CRT/P W802-MAIN/P W203	1
53	KCBC191024	WIRE 8P CRT/P W803-MAIN/P W401	1
54		ROTATION COIL WIRE 2P - W207	1
55		BRAID WIRE ASS'Y WIRE 1P-MAIN/P TP6	1
56		DEGAU. COIL 2P-MAIN PCB(W101)	1
57		FLYBACK TRANS(FBT)	1
58		FBT-MAIN PCB FBTGND & FBTPUSE	1
59		FBT - CRT(H. V.)	1
60		FBT - CRT PCB G2	1
61		FBT(RED)-CRT PCB SOCKET(SK02)	1
62		FBT(WHITE)-CRT PCB SOCKET(SK02)	1
63		VIDEO CABLE(DB15-H11)-CRT/P W801	1
64		CRT DY WIRE-MAIN PCB(W402)	1
65		BRAID WIRE ASS'Y WIRE 1P-MAIN/P GND1	1
66		BRAID WIRE ASS'Y WIRE 1P-CRT GND	1
67	NAH13*2010	CRT PCB ASS'Y	1
68	NAH13*1010	MAIN PCB ASS'Y	1
69		USB PCB ASS'Y	0
70		POWER PCB ASS'Y	0
71	2P021N28N5	LED LENS	1
※ 72	3L133N09N5	BACK PLATE(MIC IN OUT DC OUT AC SW USB VERT)	0
※ 73	3L133A09N7	BACK PLATE(MIC OUT)	
※ 74	3L096A09N5	BACK PLATE(AC SW + DC OUT)	
※ 75	3L133D09N6	BACK PLATE(AC SW + MIC OUT)	
※ 76	3L133E09N9	BACK PLATE(AC SW+MIC IN OUT)	
※ 77	3L133C09N3	BACK PLATE(AC SW)	1

※項一一依良基板可能編号

FINAL	
TOOLING	
SAMPLE	

RE ... 000

ASSEMBLY VIEW

SCALE

UNIT MM UNLESS OTHERWISE SPECIFIED

SIZE A1 DO NOT SCALE DRAWING

1